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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,223	12/05/2003	Gregory T. Huber	C-591	2462

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SUN CHEMICAL CORPORATION
222 Bridge Plaza South
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EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 09/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/730,223

Applicant(s)

HUBER ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 2/23/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. The numbering of claims is not in accordance with 37 CFR 1.126 given that there are two claims numbered 25.

Misnumbered claims 25-35 been renumbered 26-36. The following office action refers to renumbered claims 1-36.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3, 6-10, 13-14, 18-28, and 34-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claims 3, 8, 13, 27, and 34 each recite, when referring to formula A-(B-X)_n, that “B is a moiety selected from the group consisting of O, N, and S”. It is noted that the present specification discloses (page 5, lines 8-10) that B is selected from moieties that contain the elements O, N, or S such as an amino group. Thus, the scope of each of the claims is confusing because it is not clear what B encompasses - O, N, or S themselves or any moiety that contains O, N, or S. Clarification is requested.

(b) Claim 6 recites “highly dispersed colorant dispersion”. The scope of the claim is confusing because it is not clear what is meant by “highly” or when a colorant dispersion is considered “highly” dispersed.

(c) Claim 9, which depends on claim 6, recites “wherein X is C₁₀₀-C₁₅₀”. The scope of the claim is confusing because it is not clear what X is or what is meant by reciting that X is 100-150 carbons. In light of claim 6, should claim 9 be amended to recite “wherein X is a branched or linear C₁₀₀-C₁₅₀ polymeric covalently linked hydrocarbon”?

Similar confusion arises in each of claims 14, 28, and 35 which each recite “wherein X is C₁₀₀-C₁₅₀”.

(d) Claim 12 recites an improper Markush group. In line 2 after “pigment” and before “dyes”, it is suggested that “or” is changed to “and”.

(e) Claim 18, which depends on claim 16, recites “dispersion having 65 wt.% colorant” while claim 16 is drawn to “colorant dispersion comprising (a) at least about 45 wt.% of a pigment and (a) a polymeric colored dispersant having the structure A-(B-X)_n wherein A is an organic chromophore....”. Thus, the scope of claim 18 is confusing because it is not clear what “colorant” is being referred to – the pigment, the organic chromophore, or both.

(f) Claim 19, which depends on claim 16, recites “the colorant is selected from the group consisting of organic pigments, dyes, and carbon black” while claim 16 is drawn to “colorant

dispersion comprising (a) at least about 45 wt.% of a pigment and (a) a polymeric colored dispersant having the structure $A-(B-X)_n$ wherein A is an organic chromophore....". Thus, the scope of claim 19 is confusing because it is not clear what "colorant" is being referred to. Given that claim 16 already explicitly discloses the use of pigment, does this refer to the organic chromophore? Clarification is requested.

(g) Claims 18 and 23 are identical and thus, the scope of claim 23 is confusing because it is not clear what the difference is between claim 23 and claim 18.

(h) Claim 24, which depends on claim 16, recites that "the dispersant is present in about 1 wt.% to about 15 wt.% based on the weight of the colorant" while claim 16 is drawn to "colorant dispersion comprising (a) at least about 45 wt.% of a pigment and (a) a polymeric colored dispersant having the structure $A-(B-X)_n$ wherein A is an organic chromophore". Thus, the scope of claim 24 is confusing because it is not clear what "colorant" is being referred to – the pigment, the organic chromophore, or both – or what the amount of dispersant is based on. Clarification is requested.

(i) Claim 25 recites "wherein said dispersant is present in about 10 wt.% of the pigment". The scope of the claim is confusing given that it is not clear what is meant by the above cited phrase. Does this refer to the amount of dispersant present based on the amount of pigment? If so, it is suggested that the above phrase is rewritten as "wherein said dispersant is present in about 10 wt.% based on the weight of the pigment".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5-8, 10-13, 15-27, 29-34, and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by GB 1424517.

GB 1424517 discloses pigment dispersion comprising 5-70% organic pigment such as phthalocyanine, solvent, and 10-30%, based on the amount of pigment, polymeric colored dispersant of the formula $D-(Z-R)_n$ where D is dyestuff, Z is divalent bridging group including those possessing O or N, n is 1-8, and R is polymer. There is also disclosed ink comprising the pigment dispersion. Attention is drawn to page 5, lines 23-33 that disclose polymeric colored dispersant obtained from polystyrene possessing molecular weight of 2300. Given the molecular weight of styrene, i.e. 104 (C_8H_8), it is calculated that the polystyrene comprises 176 carbon atoms $((2300/104) * 8)$ (page 1, lines 12-53, page 3, lines 43-56, page 4, lines 14-21 and 79-83, page 5, lines 23-33, and page 7, lines 64-66). Given that GB 1424517 discloses dispersion as presently claimed including polymer possessing same number of carbon atoms as presently claimed, it is clear that the dispersion would inherently possess viscosity as presently claimed. Further, given that GB 1424517 discloses dispersion as presently claimed including polymer as presently claimed, it is clear that the dispersion is inherently highly dispersed and has improved color strength as presently claimed.

In light of the above, it is clear that GB 1424517 anticipates the present claims.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 4, 9, 14, 28, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 1424517.

The disclosure with respect to GB 1424517 in paragraph 5 above is incorporated here by reference.

The difference between GB 1424517 and the present claimed invention is the requirement in the claims of specific polymer.

GB 1424517 discloses pigment dispersion comprising 5-70% organic pigment such as phthalocyanine, solvent, and 10-30%, based on the amount of pigment, polymeric colored dispersant of the formula $D-(Z-R)_n$ where D is dyestuff, Z is divalent bridging group including those possessing O or N, n is 1-8, and R is polymer. It is further disclosed that the polymer possesses molecular weight of 1,000-20,000. From the examples, it is seen that the polymer includes polystyrene. Given the molecular weight of styrene, i.e. 104 (C_8H_8), it is calculated that the polystyrene comprises 76-1538 carbon atoms $((1,000/104)*8 - (20,000/104)*8)$.

It is noted that the present claims require $C_{100}-C_{150}$ hydrocarbon polymer while GB 1424517 discloses $C_{76}-C_{1538}$ hydrocarbon polymer. However, as set forth in MPEP 2144.05, in the case where the claimed range "overlap or lie inside ranges disclosed by the prior art", a *prima facie* case of obviousness exists, *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, based on the desired properties of the polymer, i.e. molecular weight, viscosity, etc., it would have been within the skill level of one of ordinary skill in the art to choose the size of the polymer, i.e. number of repeating units and thus, number of carbon present.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to utilize polymer, including C_{100} - C_{150} polymeric hydrocarbon as presently claimed, in the polymeric colored dispersant of GB 1424517 in order to produce dispersion with desired properties, and thereby arrive at the claimed invention.

9. Claims 1-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 1424517 in view of GB 1108261.

GB 1424517 discloses pigment dispersion comprising 5-70% organic pigment such as phthalocyanine, solvent, and 10-30%, based on the amount of pigment, polymeric colored dispersant of the formula $D-(Z-R)_n$ where D is dyestuff, Z is divalent bridging group including those possessing O or N, n is 1-8, and R is polymer. There is also disclosed ink comprising the pigment dispersion. It is disclosed that the polymer has molecular weight of 1,000-20,000. For specific types of polymer, GB 1424517 refers to page 2, lines 39-91 of GB 1108261 which discloses the use of polymer including hydrocarbon such as polyisobutylene. Given the molecular weight of isobutylene, i.e. 56 (C_4H_8), it is calculated that the polyisobutylene comprises 71-1428 carbon atoms $((1,000/56)*4 - (20,000/56)*4)$ (page 1, lines 12-53, page 3, lines 43-56, page 4, lines 14-21 and 79-83, page 5, lines 23-33, and page 7, lines 64-66). Given that GB 1424517 discloses dispersion as presently claimed including polymer as presently claimed, it is clear that the dispersion would intrinsically possess viscosity as presently claimed. Further, given that GB 1424517 discloses dispersion as presently claimed including polymer as presently claimed, it is clear that the dispersion is intrinsically highly dispersed and has improved color strength as presently claimed.

It is noted that the present claims require C₅₀-C₂₀₀ or C₁₀₀-C₁₅₀ hydrocarbon polymer while GB 1424517 discloses C₇₁-C₁₄₂₈ hydrocarbon polymer. However, as set forth in MPEP 2144.05, in the case where the claimed range “overlap or lie inside ranges disclosed by the prior art”, a *prima facie* case of obviousness exists, *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, based on the desired properties of the polymer, i.e. molecular weight, viscosity, etc., it would have been within the skill level of one of ordinary skill in the art to choose the size of the polymer, i.e. number of repeating units and thus, number of carbons present.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to utilize polymer, including polymeric hydrocarbon as presently claimed, in the polymeric colored dispersant of GB 1424517 in order to produce dispersion with desired properties, and thereby arrive at the claimed invention.

10. Claims 1-15 and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. (U.S. 7,056,962).

Johnson et al. disclose modified pigment comprising the structure pigment-X-polymer[R] which corresponds to presently claimed A-(B-X)_n when n is 1 and wherein pigment, which corresponds to A, is carbon black or organic pigment, X, which corresponds to B, is linking moiety that is alkyl or aromatic group substituted with ether or amide group, and polymer[R], which corresponds to X, is obtained from 1-500 repeating units and includes polyethylene, polyisobutylene, or polystyrene. There is also disclosed ink comprising the above modified pigment and highly dispersed colorant dispersion comprising the above modified pigment. It is

disclosed that the modified pigment is used in lithographic or gravure ink (col.1, lines 12-15 and 54-58, col.2, lines 47-67, col.3, lines 1-3 and 23-26, col.5, lines 4-34 and 51-53, col.6, line 29- col.7, line 21, and col.11, lines 5-32).

The difference between Johnson et al. and the present claimed invention is the requirement in the claims of (a) the number of carbon present in the polymeric hydrocarbon and (b) polymeric colored dispersant.

With respect to difference (a), it is noted that the present claims require C₅₀-C₂₀₀ or C₁₀₀-C₁₅₀ polymeric hydrocarbon. Given that Johnson et al. disclose that the polymer is obtained from 1-500 repeating units and given that isobutylene, for instance, has 4 carbon atoms (C₄H₈), it is calculated that the polyisobutylene has 4-2000 carbon atoms.

As set forth in MPEP 2144.05, in the case where the claimed range “overlap or lie inside ranges disclosed by the prior art”, a *prima facie* case of obviousness exists, *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, based on the desired properties of the polymer, i.e. molecular weight, viscosity, etc., it would have been within the skill level of one of ordinary skill in the art to choose the number of repeating units from which the polymer is obtained.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to utilize polymer, including polymeric hydrocarbon as presently claimed, in the polymeric colored dispersant of Johnson et al. in order to produce dispersion with desired properties, and thereby arrive at the claimed invention.

With respect to difference (b), while there is no disclosure that the modified pigment of Johnson et al. is a dispersant as presently claimed, applicants attention is drawn to MPEP

2111.02 which states that “if the body of a claim fully and intrinsically sets forth all the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention’s limitations, then the preamble is not considered a limitation and is of no significance to claim construction”. Further, MPEP 2111.02 states that statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the purpose or intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use, then it meets the claim.

It is the examiner’s position that the preamble does not state any distinct definition of any of the claimed invention’s limitations and further that the purpose or intended use, i.e. dispersant, recited in the present claims does not result in a structural difference between the presently claimed invention and the prior art modified pigment and further that the prior art structure which is identical to that set forth in the present claims is capable of performing the recited purpose or intended use and thus, one of ordinary skill in the art would have arrived at the claimed invention.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wingard, Jr. et al. (U.S. 4,375,357) disclose polystyrene having attached chromophore.

Vidal et al. (U.S. 4,014,844) disclose polyethylene grafted to carbon black.

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
9/14/06